

WHAT IS CLAIMED IS:

1. A data code label comprising:
 - a base;
 - 5 an optical data image representing data codes and corresponding error correction codes on said base; and
 - an ID tag on said base including:
 - data input and output means; and
 - a memory having an identification data writing area for
 - 10 storing identification data and a decode data writing area for storing decode data corresponding to at least a portion of said data codes received from said data input and output means.
2. A method of decoding data codes comprising the steps of:
 - 15 (a) reading an optical data image representing said data codes and corresponding error correction codes on a base which supports an ID tag having input and output means and a memory;
 - (b) decoding each of said data codes with said read optical data image to obtain decode data;
 - 20 (c) detecting an error in the result in step (b) with said error correction codes;
 - (d) error-correction-decoding said data codes with said error correction codes to obtain said decode data when said error is detected in step (c); and
 - 25 (e) storing the result of step (d) in said memory through said input and output means as said decode data.

3. The method as claimed in claim 2, further comprising the step of:

(f) reading said decode data corresponding to one of data codes showing said error in step (c) from said memory through said input and output means when said error is detected in step (c), wherein said steps (d) and (e) are effected when said decode data cannot be read in step (f).

4. The method as claimed in claim 2, wherein said steps (b) and (c) are repeatedly effected, said method further comprising the steps of:

(g) calculating a rate of said errors in repeatedly effected steps (b) and (c) for all of said data codes and said error correction codes represented by said optical data image when said error is detected;

(h) obtaining said decode data in said memory when said rate in step (g) is higher than a reference and said error is detected in step (c);

(i) calculating said rate again such that said error of said decode data obtained in step (h) and said error correction code corresponding to said decode data obtained in step (h) is neglected when said error is detected in step (c) and said decode data is successfully obtained from said memory in step (h); and

(j) effecting step (d) for another one of said data codes showing said error in step (c) when said rate in step (i) is not higher than said reference.

5. The method as claimed in claim 3, further comprising the steps of:

- (g) storing said decode data obtained in steps (b), (d), (f); and
- (h) outputting said decode data stored in step (g).

5 6. The method as claimed in claim 2, wherein said memory has an identification data writing area and a decode data writing area and in step (e), and said decode data is stored in said decode data writing area.

10 7. An optical data image decoding system comprising:

a data code label comprising: a base; an optical data image representing data codes and corresponding error correction codes on said base; and an ID tag on said base including: data input and output means; and a memory having an identification data writing
15 area for storing identification data and a decode data writing area for storing decode data corresponding to at least a portion of said data codes received from said data input and output means;

optical data image reading means for reading said optical data image;

20 decoding means for decoding said data codes from said optical data image from said optical data image reading means to obtain said decode data:

detecting means for detecting an error in said decoding means:

25 error-correction decoding means for error-correction-decoding said data codes with said error correction codes to obtain said

decode data when said error is detected; and

storing means for storing said decode data obtained by said error-correction decoding means in said memory through said input and output means.

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8. The system as claimed in claim 7, further comprising:

reading means for reading said decode data corresponding to one of data codes showing said error from said memory through said input and output means when said error is detected, wherein said error-correction decoding means and storing means are operated when said decode data cannot be read by said reading means.

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9. The system as claimed in claim 7, wherein said decoding means and said detecting means are repeatedly operated, said system

15 further comprising:

first calculating means for calculating a rate of said errors of all of said data codes and said error correction codes represented by said optical image;

obtaining means for obtaining said decode data in said memory when said rate from said first calculating means is higher than a reference and said error is detected by said detection means;

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second calculating means for calculating said rate again such that said error of said decode data obtained by said obtaining means and said error correction code corresponding to said decode data

obtained by said obtaining means is neglected when and said error is detected by said detection means and said decode data is

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successfully obtained from said memory by said obtaining means,
wherein said error-correction decoding means error-correction-
decodes another one of said data codes showing said error detected
by the detecting means when said rate calculated by said second
5 calculating means is not higher than said reference.

10. The system as claimed in claim 7, further comprising:

an optical data image reader having a case containing said
reading means, said optical data image reading means, said decoding
10 means, said detecting means, said correcting means, and said storing
means.

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